

© 2021 UASolutions Group. All rights reserved.

No part of this publication may be reproduced, transmitted, transcribed, stored in a retrieval system, translated into any other language in any form or by any means, electronic or mechanical, including photocopying or recording, for any purpose, without the express permission of UASolutions Group. The information in this publication is subject to change without notice, although every effort is made to ensure the accuracy of the information in this document.

No part of this publication may be reproduced in any form for any purpose without the express permission of UASolutions Group.



UASolutions Group, Inc.
1008 Daisy Lane, Rockledge, FL 32955
Tel: (321) 261-2547

kellyneubecker@uasolutionsgroup.com

July 27, 2021

U.S. Department of Transportation, Docket Operations
West Building Ground Floor, Room W12-140
1200 New Jersey Avenue, SE
Washington, DC 20590

Re: Amended Petition for an Exemption to Conduct Unmanned Aircraft Systems (UAS) Operations Allowed by Special authority for certain unmanned aircraft systems. Title 49 U.S.C. § 44807, and 14 C.F.R. Part 11 to Authorize Commercial Agricultural- Related Services with UAS Weighing 55 Pounds or More

A. SUMMARY:

On July 6, 2021, a Petition for exemption was submitted on behalf of our client, Ocean Air Helicopters, Inc., FAA docket number FAA-2021-0588-0001. This revised petition serves as an amendment to the original filing because the actual name of the company is Ocean Air Helicopters Inc., (hereafter Ocean Air Helicopters). Ocean Air Helicopters is a 14 CFR Part 137 certified agricultural services company and pursuant to Title 49 U.S.C. § 44807, Special authority for certain unmanned aircraft systems and 14 C.F.R. Part 11, Ocean Air Helicopters, Petitioner hereby respectfully requests summary grant and necessary exemptions from the following listed Code of Federal Regulations ("CFR") for the purpose of operating the HSE-UAV M8A Pro unmanned aircraft systems ("UAS") weighing over 55 pounds but no more than 98.8 pounds, for aerial agricultural vegetation control and management operations in remote rural operating environments. The operations will be conducted within and under the conditions outlined herein, or as may be established by the FAA, as required by Title 49 U.S.C. § 44807.

The proposed operation in this Petition for Exemption is similar in nature to those currently conducted by Powers Flight Group, Exemption No. 18009.

As described more fully below in this particular petition, the requested exemption

would permit the operation of the HSE-UAV M8A Pro by petitioner, under controlled conditions in predetermined airspace that is, 1) Limited in scope 2) Controlled as to access by mission essential personnel only. Grant of the requested exemption is based upon the concise direction expressed within Title 49 U.S.C. § 44807; the added authority granted by the Act, as amended; an equivalent level of safety regarding flight operations as expressed herein, and significant cost savings achieved by transitioning from traditional manned aerial resources to UASs. The petitioner respectfully requests that the FAA grant the requested exemption without delay. Petitioner will operate the HSE-UAV M8A Pro while keeping the documents required by the regulations at the ground control station and immediately accessible to the Pilot in Command (PIC) and by modification of the required markings (registration number) of the UAS to be displayed on the fuselage.

The relief requested in this Petition is considered a summary grant as the HSE-UAV M8A Pro aircraft has already been approved by the FAA and the DOT for commercial agricultural related services in numerous other exemptions. It is also analogous that granted in Exemption No. 18009

The name and address of the Petitioner is:

Ocean Air Helicopters, Inc.

The primary contact for this petition, with a copy to me at the address above is:

Gregory Beck
30718 Pauma Heights Road
Valley Center, CA 92082

In support of this Petition for Exemption, Ocean Air Helicopters will submit the following associated UAS operating documents:

- Ocean Air Helicopters Pilot and Aircrew Training Program
- Ocean Air Helicopters Flight Operations and Procedures Manual
- Ocean Air Helicopters Operational Risk and Safety Manual
- M8A Pro Manual
- AG Brochure
- Ocean Air Helicopters Preflight Checklists

All of these documents will be submitted on a confidential basis under separate cover, pursuant to 14 C.F.R. § 11.35(b), as the documents contain confidential commercial and proprietary information that Ocean Air Helicopters has not and will not share with others. The information contained in this material is not generally available to the public and is protected from release under the Freedom of Information Act, 5 U.S.C. § 552 *et seq.*

B. BACKGROUND OF PETITIONER AND MANUFACTURER

Ocean Air Helicopters currently provides manned, 14 CFR Part 137 commercial agricultural spraying services with the knowledge and operational infrastructure to conduct precision crop spraying in a safe, precise, and legal manner. The HSE-UAV M8A Pro platform chosen for the operations include the most sophisticated features, are manufactured to be durable, and are the easiest to use systems on the market. Additionally, Ocean Air

Helicopters strives for innovative power cell technology with improved power, performance, longevity and superior weight standards for UAS. HSE-UAV UAS are designed for maximum flight time with minimum down time. Ocean Air Helicopters helps customers maximize the value of their land in an efficient, cost-competitive manner utilizing UAS reducing reliance on manual labor, while minimizing environmental impact.

The UAS for the purposes of this petition is the Beijing TT Aviation Technology Co., Ltd. ("TTA") M8A Pro.

Due to a marketing change in 2018, HSE updated their product names for standardization from the HSE-UAV V6A+ v2 to the original M8A Pro. The aircraft themselves did not change. They've only standardized the model names for global marketing consistency efforts.

TT Aviation Technology Co., Ltd. was established in 2008 in Beijing and commissioned by the government and enterprises and institutions engaged in unmanned product development, system integration and services of private enterprises. These TTA UAS platforms have over four years of industry application experience in China and the Chinese Society of Agricultural Engineering plant protection and pesticide application technology, leading the company's main international multi-rotor UAV, fixed-wing UAV and manned aircraft, and other aviation rotorcraft research and development, sales, leasing and services. The company maintains ISO9001 Quality System and 14001 Environmental Management System certifications and is the key laboratory for Beijing University of Aeronautics and Astronautics. They are the first and largest AOPA 'CAAC' certified Training Facility in China as well as the largest AOPA Testing Facility in North China.

Ocean Air Helicopters will be utilizing the same HSE-UAV M8A Pro as well as proven technologies the FAA has already accepted and approved in numerous previous Exemptions. All of the appropriate documentation to accompany Ocean Air Helicopters's Petition is included.

Additionally, the M8A Pro has logged more than 10,000 hours of testing since its inception by the TT Aviation Technology Co., Ltd. Additional testing has been performed by Beijing University of Aeronautics & Astronautics as well as the National Plant Protection, machinery quality supervision and inspection center. There are currently over 1,287 of the M8A Pro sold globally on an annual basis with an estimated 1,624,280 hours flown safely by customers worldwide.

C. SYSTEM BENEFITS AND ENHANCED SAFETY

1. Ocean Air Helicopters intent along with a complete range of vegetation control and management services, is to apply pesticides and herbicides at the request of private and commercial companies as well as potential Governmental organizations. This process protects crops from biological organisms, including weeds, pathogens, and arthropods, that interferes with the production of crops affecting quality and/or yield. Insects in Particular can have large and irreversible effects on crops and yields, which can impact consumers through higher crop prices. Spraying herbicides benefits agricultural ecology and increases the efficiency of harvesting operations. Moreover, the efficient methods to be applied by Ocean Air Helicopters optimizes the use of herbicides thus reducing the negative impact of excess pesticide application and residual chemicals being left in the soil or running off into streams or

the water table.

2. Applications by manned helicopters for agriculture carries significant risks of fatality.¹ This was such a concern that in 2014 the National Transportation and Safety Board commissioned a report to understand root causes. The enhanced safety achieved using an unmanned aircraft with the specifications described in this petition, as opposed to the much larger, manned aircraft carrying fuel and crew or passengers, is safer and exposes workers and other people on the ground to significantly less risk. Additionally, Ocean Air Helicopters UA use batteries which are not as flammable and explosive as 100LL or Jet A fuel. If there was an emergency where the UA crashed, there is a significantly lower chance of individuals being injured from an explosion or fire.
3. According to a USDA Economic Research Service Report, of the United States' 408 million acres of cropland, about 70% (286 million acres) is commercially treated with crop protection products. Out of that, the agricultural aviation industry treats 71 million acres of cropland aurally each year. By utilizing UAS, this vital portion of our nation's food supply can be treated in a more environmentally safe way, thus protecting our streams from excessive chemical run off, algae blooms, etc.
4. A large portion of the agricultural land is currently sprayed by crews on foot, carrying heavy loads on steep, dangerous terrain. Ocean Air Helicopters will replace this method using its aircraft. It is in the interest of safety to reduce worker exposure to this difficult and dangerous environment.
5. Manned aircraft availability and scheduling are becoming increasingly difficult and costly for Ocean Air Helicopters customers. On average, each manned aerial application business has 2.1 aircraft, ranging in price from \$100,000 to \$1,400,000 depending on hopper size, engine type and engine size. Pilot shortages, aircraft shortages, and driver shortages are increasing. Smaller owners and non-governmental organizations without several hundred thousand acres are finding it difficult to obtain economical services with these figures. Ocean Air Helicopters can increase service providers at a lower cost and alleviate pilot and service shortages for small landowners.
6. Manned airplanes and helicopters produce significant noise pollution that disrupt the public's ability to enjoy both private and public property. UAS are much quieter and will not disrupt the public as much as manned aircraft; thus, the benefit will be recognized as a reduction in noise pollution.
7. Pesticides being sprayed from high elevations can be picked up by the wind and carried for miles. By flying at a lower altitude (6-12 m), and by never leaving the customer's site, there is a significantly reduced chance of pesticides ("driftable fines") being accidentally sprayed in the wrong area. With manned aircraft and helicopters, this can happen in a number of ways: Pilot error or map misinterpretation en route to

¹ See e.g., NTSB Special Investigative Report on the Safety of Agricultural Aircraft Operations, NTSB/SIR-14/01 (Adopted May 7, 2014):

"78 accidents [and 10 fatalities] occurred during calendar year 2013 and involved some aspect of agricultural (ag) operations, pilot training, or other crop protection activities. The report identifies the following recurring safety issues: lack of ag operations-specific fatigue management guidance, lack of ag operations-specific risk management guidance, inadequate aircraft maintenance, and lack of guidance for pilot knowledge and skills tests."

the site, pesticides being picked up by the wind and blown onto neighboring property affecting commercial cropland and residential areas, and equipment malfunction.

D. DESCRIPTION OF UAS

The aircraft is a multi-rotor UAS aircraft comprised of a VTOL UA and a transportable Ground Control Station (GCS). It provides a wide array of essential agricultural spraying services, including watering, fertilizers, pesticides, and herbicides. It can also be equipped with sensors and equipment to detect and monitor agricultural areas that require irrigation, fertilization, or other treatments. It does not carry any flammable propellant or fuel.

Numerous companies are currently operating The M8A Pro throughout the United States by previously approved Section 333 exemptions by the FAA for aircraft over 55 lbs. The dimensions and physical characteristics of the UAS are as follows:

The HSE-UAV M8A Pro is a six- rotor UA with a rotor spread of 53.5 inches (136cm). The HSE UAV M8A Pro empty weight is 54.7 pounds and it is capable of carrying a 44.1-pound payload. The maximum operational weight is 98.8 pounds.

M8A Pro

Flight Controller: PixHawk2

Manufacturer: Beijing TT Aviation Technology Co., Ltd. ("TTA").

Utilization: Essential agricultural spraying services, including watering, fertilizers, pesticides, and herbicides.

Airframe Weight: 54.7 lbs. empty.

Tank Weight (full): 44.1 lbs.

All up weight: 98.8 lbs.

I. Standard Components and Safety Systems

Pixhawk2 flight controller - The HSE-UAV AG V8+v2 employ the Pixhawk v2.1 flight controller utilizing the ArduCopter software programming. The Pixhawk v2.1 flight controller is in widespread use amassing over 15 million flight hours in worldwide service. Functionality includes a Return To Land (RTL) feature to mitigate lost signal, low battery, lost Visual Line of Sight (VLOS) and loss of pilot control (flyaway). The ArduCopter software provides mitigation for loss of telemetry, allowing the pilot to either continue flight in pre-programmed mode, or manually fly under Remote Control (RC) mode. Additionally, the UAS listed in the petition is equipped with a second Global Positioning System (GPS) with geo-fencing capabilities as a failsafe.

Rotor Fail Protection - If one rotor fails, the flight controller will compensate for lost rotor and will notify operator via on-screen warnings; aircraft maintains stability allowing operator to safely land.

Open-source ground software system – The system uses Mission Planner and Ground Control, or a derivative of those. These are standard, mature software solutions, built on open-source platforms and developed in Partnership with 3D Robotics and the Ardupilot group.

Emergency brake and return-to-launch (RTL) - The operator has systems that they

can use to instantly stop the UA and return it to the base point at a predetermined safe height, respectively.

Geofencing and Obstacle avoidance - The UA's flight controller is given GPS coordinates of a boundary that it cannot leave, keeping the UA from leaving the pre-determined and defined operations area. When enabled, the UA can "hit" the perimeter, but not fly past or through it. Manual or automatic inputs commanding the UA to break the geofence are ignored. In the case where there is a road along the property line, or a place where a neighbor's property is located, the operator can use the Ground Station Google Maps interface and draw a line around the field. This is a perimeter that the drone will not fly outside of. If the operator were to try to fly beyond that boundary, the aircraft would approach the line and stop and hover.

Second, for an obstacle, other property, or people, and purposeful obstacle boundary can be established. This means that the aircraft will build its flight plan and avoid that obstacle. Further, the operator can specify how large of a buffer they would like to keep between the aircraft and that obstacle.

As a reminder, if there was ever a time where a non-participant person or property entered the planned flight area, the operator could immediately halt the operation by activating the emergency "kill switch" to immediately stop the rotors or may press a switch to activate the emergency return to home feature.

Beacon - In the extremely unlikely event of a system malfunction that causes a crash, a beacon attached to the UA will help the PIC and ground crew quickly locate it, ensuring a quick response to secure the equipment and surrounding area.

RTK GPS - The UAS has a telemetry link to a base station which makes GPS corrections, giving the UA an accurate location reading with under 3 feet of precision. (Typically, 50cm). This ensures that the UA is flying the missions it is given and applying herbicides in a pattern much more efficiently and consistently than agricultural helicopters.²

Redundant GPS- All UAS are equipped with redundant GPS units. Should the primary GPS unit experience a failure, a second GPS unit will automatically takeover as a failsafe to ensure accurate positioning and navigation is maintained. Full dual redundancy (Gemini M & Gemini S -Full GPS, IMU, Compass and Controllers.) Automatic switching in real-time between compass, IMU, GPS or controller if one fails.

Telemetry - Should a telemetry link to the base station be lost, the UA has all mission parameters stored onboard, and can safely continue to execute a mission. If the RTK link is dropped, the positioning accuracy may drop to around 3m accuracy. Audio alerts on the RC remote and base station computer will alert the PIC, who may opt to allow the UA to continue its mission if it is safe to do so or interrupt the mission and bring the UA back under RC control.

RC control - All missions occur with pre-programmed commands providing instructions to the UA. At all times, a PIC has an RC remote with the ability to override the current mission. Should the RC connection be lost, the autopilot software will

² Based on experience with these types of operations, HSE-UAV would recommend an RTK GPS be operating with a positional accuracy under 2m as a requirement for operations of this type.

immediately end the mission and return the UA to the home launch location. In this case, the UA ascends to a height set by the PIC in advance of the mission and determined to be safe given the surrounding terrain, normally 100-400 feet. The UA then returns in a straight line to the launch location. The PIC may choose to resume or alter the mission if an RC link is established again while the UA returns home.

Emergency Kill Switch - An emergency "Kill Switch" allows the operator to instantly stop motors in the event of an emergency.

II. Additional Safety Functions

Additional supplemental safety information is provided below to strengthen the petitioner's position that the proposed UASs can be operated safely in the NAS in accordance with Title 49 U.S.C. § 44807. The HSE-UAV AG-V6A+ v2 has an unprecedented safety rating with 0 reported injuries or fatalities during customer use and or testing.

Full Black Box / Flight Recording of all flights: Flight data shows a real-time video of all operator control input, GPS statuses, vibrate, shake and motor balance statuses along with battery voltage and all other critical telemetry data allowing operator to fully track entire history. All flights are automatically saved on the GCS. This further adds to safety for operator and VO training as operator-caused issues can be quickly identified. Further, it allows for remote diagnostics and has a financial benefit not requiring aircraft and components to be unnecessarily shipped.

Optional Parachute protection: Automatically deploys based on sudden descent or operator-activated switch.

Safety parameters: Max altitude, distance from home, horizontal speed and vertical speed: defaults are set by Ocean Air Helicopters, and the customer can set these as well based on location and operating restrictions.

High Visibility LED Aviation Lighting: Long-range visible, high intensity LED strobes.

Intelligent Assisted Launch and Landing: Aircraft uses GPS and IMU data to determine when the craft is fully on the ground, meaning the craft will not shut rotors off until firmly on the ground. Aircraft also uses IMU data to safely and smoothly handle "In Ground Effect" caused by the rotor downwash, which lessens stress and accident likelihood for operator.

Flight Stall Prevention: Flight controller prevents accidental 'throttle zero' motor stall while in the air. In an emergency, operator can switch instantly to 'manual' mode to activate rotor kill, providing complete system override by the pilot during an in-flight emergency.

Semi-Automatic Navigation: Allows operator to manually override aircraft speed and altitude instantly during automatic Ground Station controlled flights.

10.5-second auto-lock rotors: Automatically locks rotor from accidental turning after initial power connected and again five seconds after rotors stop.

Change of Flight Parameters: Ability to change parameters in real-time (during flight).

Flight Controller Modifications: Ability to program, calibrate, debug, and modify flight controller information without power to rotors: allows safe physical interaction with UA

while performing maintenance and servicing.

Return to Home Features: Ability to move or edit "Home" (return to home) location if original becomes obstructed (animals, people, or too far of a distance, etc.) after initial launch. If a failure occurs, UA will land at newly designated location.

III. Operational Analysis and Flight Testing

The HSE-UAV M8A Pro has onboard safety features to ensure the UAS can operate safely under both normal and contingency operating conditions. These features include automation to increase safety and reduce pilot workload. Some examples are the self-monitoring function (pre-takeoff diagnostics), an altitude control system, and redundant GPS flight control systems with geo-fencing. The lost-link safety default feature allows the HSE-UAV M8A Pro to automatically hover and land in response to a lost-link event. Safety features such as the GPS warning/indicator lights and speed indicator light provide critical system status information to the pilot. HSE has been manufacturing and tracking reliability of the HSE-UAV M8A Pro and similar models since 2009. In support of the manufacturer's quality control program, the petitioner provided entrustment inspections from Beijing TT Aviation Technology Co.,Ltd., and the Beihang University,

The M8A Pro also has operated successfully in extreme weather conditions to include high winds and a variety of terrains. the aircraft only encountered two failures:

1. Barometer inaccuracy - caused aircraft to initiate slow descent, no injury or damage resulted. Solution - replaced barometer
2. Magnetic compass failure - redundant system activated, no injuries or damage occurred. Solution - replaced defective Magnetic Compass

Aircraft performed well in extreme altitudes and high winds, no loss of communications, no issues with stability, or control and handling. Performance of all safety features work as designed.

E. REGULATORY BASIS FOR PETITION AND REGULATIONS FROM WHICH EXEMPTION IS SOUGHT

1. 49 U.S.C § 44807

The Special Authority for Certain Unmanned Systems (49 U.S.C. § 44807) grants the Secretary of Transportation the authority to use a risk-based approach to determine whether an airworthiness certificate is required for a drone to operate safely in the NAS. Under this authority, the Secretary may grant exemptions to the applicable operating rules, aircraft requirements, and pilot requirements for a specific operation on a case-by-case basis. The Special Authority for Certain Unmanned Systems (49 U.S.C. § 44807) grants UAS operators safe and legal entry into the NAS upon consideration of its size, weight, speed, operational capability, proximity to airports and populated areas, and operation within visual line of sight. The FAA further may find that the UAS does not require "airworthiness certification under section 44704 of title 49, United States Code."

2. 49 U.S.C. § 44701

The FAA is further authorized to grant exemptions from its safety regulations and minimum standards under 49 U.S.C. § 44701 ("Section 44701") "if the Administrator finds the exemption is in the public interest." Section 44701(f) (authorizing the grant of exemptions from

safety regulations and minimum standards under Section 44701(a) and (b) and Sections 44702-44716). Under 49 U.S.C. § 44701(f), the “Administrator may grant an exemption from a requirement of a regulation prescribed under subsection (a) or (b) of this section or any of sections 44702-44716 of [Title 49] if the Administrator finds the exemption is in the public interest.”

For the reasons addressed herein, this Petition qualifies for expedited approval of Petitioner’s request for exemption under both 49 U.S.C § 44807 and 49 U.S.C § 44701.

Ocean Air Helicopters seeks exemption from the following interrelated provisions of 14 C.F.R. Parts 91, and 137:

FAR	Description
§ 91.7(a)	Civil aircraft airworthiness.
§ 91.119(c)	Minimum safe altitudes: General.
§ 91.121	Altimeter settings.
§ 91.151(b)	Fuel requirements for flight in VFR conditions.
§ 91.405(a)	Maintenance required.
§ 91.407(a)(1)	Operation after maintenance, preventive maintenance, rebuilding, and inspections.
§ 91.409(a)(1) and (2)	Inspections.
§ 91.417(a) and (b)	Maintenance records.
§ 137.19 (d) and (e)(2)(i),(ii)(iii) and (v)	Certification requirements.
§ 137.31	Aircraft requirements.
§ 137.33	Carrying of certificate.
§ 137.42	Fastening of safety belts and shoulder Harnesses

Listed below are the specific Code of Federal Regulation (“CFR”) sections from which an exemption is sought, the rationale for why an exemption is needed, and a brief summary of the operating procedures and safeguards, which are described more fully in the operating documents being submitted under separate cover, which will ensure that the proposed operations can be conducted at a level of safety that is at least equal to that provided by the rule from which exemption is sought. For ease of review, this section divides the FARs from which exemption is sought into four main categories: (1) FARs pertaining to the UAS; (2) FARs pertaining to UAS Operating Parameters, and; (3) FARs pertaining to Part 137 Operating Parameters.

I. FARs Pertaining to the Unmanned Aircraft System

§ 91.405(a) *Maintenance required*

§ 91.407(a)(1) *Operation after maintenance, preventive maintenance, rebuilding, or alteration*

§ 91.409(a)(1) and (2) *Inspections*

§ 91.417(a) and (b) *Maintenance records*

Ocean Air Helicopters seeks an exemption from the following maintenance and

inspection related FARs: §§ 91.405(a) *Maintenance required*, 91.407(a)(1) *Operation after maintenance, preventive maintenance, rebuilding, or alteration*, 91.409(a)(1) and (2) *Inspections*, and 91.417(a) and (b) *Maintenance records*. These regulations specify maintenance, inspection, and records standards in reference to FAR § 43.6. An exemption from these regulations is needed because Part 43 and these sections only apply to aircraft with an airworthiness certificate, which the UAS to be operated under this exemption will not have, and because compliance with these regulatory provisions in the context of UAS operations is not feasible.

An equivalent level of safety will be achieved because maintenance, inspections, and records handling will be performed in accordance with the manufacturer's manual, any required manufacturer safety or service bulletins. Moreover, the PIC will conduct a pre-flight inspection of the UAS and all associated equipment to account for all discrepancies and/or inoperable components. Maintenance will be performed and verified to address any conditions potentially affecting the safe operation of the UAS, and no flights will occur unless and until all flight critical components of the UAS have been found to be airworthy and in a condition for safe operation. A functional test flight will also be conducted in a controlled environment following the replacement of any flight critical components, and, as required by the operating documents, the PIC who conducts the functional test flight will make an entry in the UAS aircraft records of the flight. Functional flight tests will not involve the carriage of hazardous materials, will not be a multi-vehicle operation, and the vehicle will have an all-together weight below 55 pounds during flight testing. In addition, the operator will be required to follow the UAS manufacturer's maintenance, overhaul, replacement, inspection, and life limit requirements for the UAS and its components. Along with the preflight checklists, Ocean Air Helicopters Pilot Training Program, and a routine maintenance program, Ocean Air Helicopters believes an equivalent level of safety is met, and that equipment at risk of failure can be safely identified before flights occur.

The FAA determined that the proposed UAS operations required exemption from FAR §§ 91.405(a), 91.407(a)(1), 91.409(a)(1) and (2), and 91.417(a) and (b), and that the achievement of an adequate level of safety required certain conditions and limitations. Ocean Air Helicopters has proposed in this Petition a number of Limitations related to maintenance, inspections, and records which it believes provide a level of safety at least equivalent to that provided by FAR §§ 91.405(a), 91.407(a)(1), 91.409(a)(1) and (2), and 91.417(a) and (b). For this reason, and consistent with the exemption granted from these sections in the Powers Flight Group Services Exemption, Ocean Air Helicopters requests an exemption from these sections subject to the Powers Flight Group Services limitations, without having to perform the inspections and maintenance items required by FAR §§ 91.405(a), 91.407(a)(1), 91.409(a)(1) and (2), and 91.417(a) and (b).

II. FARs Pertaining to Unmanned Aircraft System Operating Parameters

§ 91.7(a) *Civil aircraft airworthiness*

Inasmuch as there will be no airworthiness certificate issued for the UAS, Ocean Air Helicopters seeks an exemption from FAR § 91.7(a) *Civil aircraft airworthiness*, which requires that a civil aircraft be in an airworthy condition to be operated. While the UAS operated by Ocean Air Helicopters will not have an airworthiness certificate, consistent with the FAA's determination in the Powers Flight Group Services Exemption, the pilot may determine the UA is in an airworthy condition prior to flight. As described more fully in the

operating documents, this is achieved through adherence to Ocean Air Helicopters's routine pre-flight checklist regularly scheduled maintenance, and the enhanced pilot training requirements of the Ocean Air Helicopters Pilot Training Program.

§ 91.119(c) *Minimum safe altitudes*

Ocean Air Helicopters also seeks an exemption from FAR § 91.119(c) *Minimum safe altitudes*, to the extent necessary to allow UAS operations over *other than congested areas* at altitudes lower than those permitted by rule. The ability to operate at those altitudes is one of the key benefits of using UAS for the proposed agricultural activities. An equivalent or greater level of safety will be achieved given the size, relatively light weight, and slow speed of the UAS, as well as the controlled location where the operations will occur.

Ocean Air Helicopters generally will try to maintain an operating altitude of between 10-25 feet AGL during its spraying operations. That altitude is only increased when exercising caution and issuing a return-to-launch command to the UAS, which causes the UAS to ascend to an altitude of 100 feet AGL before returning home. In the extremely remote and secure environment where Ocean Air Helicopters operations will occur, flying at a low altitude increases the aircraft's efficiency, without posing any increased risk to people or property. Even at these low altitudes, Ocean Air Helicopters UAS operations will be conducted at a level of safety equal to or greater than that achieved by a larger manned aircraft performing similar activities at the altitudes required by FAR § 91.119. Moreover, an equivalent or even higher level of safety can be provided instead by, as provided herein, operating so as to de-conflict with manned vehicles operating above 500 feet AGL, within the VLOS of the PIC with the assistance of multiple VOs so as to ensure the safety of and de-conflict with any persons or property in the air and on the ground, including Participating and non-Participating personnel as well as the other UAS.

§ 91.121 *Altimeter settings*

Ocean Air Helicopters also requests an exemption from FAR § 91.121 *Altimeter settings*, which requires a person operating an aircraft to maintain cruising altitude or flight level by reference to an altimeter that is set to the elevation of the departure airport or barometric pressure. In the Powers Flight Group Services Exemption, the FAA stated that an equivalent level of safety to the requirements of FAR § 91.121 can be achieved in circumstances where the PIC uses an alternative means for measuring and reporting UA altitude, such as global positioning system (GPS). The UAS that Ocean Air Helicopters intends to use for performing the proposed operations will be equipped with GPS or other equipment for measuring and reporting UAS altitude, and the PIC will check the UA altitude reading prior to each takeoff, effectively zeroing the UA's altitude at that point. Consistent with previously granted exemptions, these requirements ensure that an equivalent level of safety will be achieved, and an exemption from the requirements of FAR § 91.121 is therefore appropriate.

§ 91.151(b), *Fuel requirements for flight in VFR conditions*

Finally, Ocean Air Helicopters seeks an exemption from FAR § 91.151(b) *Fuel requirements for flight in VFR conditions*, which would otherwise require a 20-minute fuel reserve to be maintained. The FAA has previously determined that a requirement prohibiting the PIC from beginning a UAS flight unless (considering wind and forecast weather conditions) there was enough available power for UAS to operate for the intended operational time and to operate after that for at least five minutes or with the reserve power recommended

by the manufacturer if greater would ensure an equivalent level of safety to the fuel requirements of FAR § 91.151. Ocean Air Helicopters will adhere to the same reserve power requirement and an exemption from FAR § 91.151's fuel requirements for flight in VFR conditions is therefore appropriate.

III. FARs Pertaining to Part 137 Certification Requirements

Ocean Air Helicopters seeks an exemption from the following FARs in Part 137: §§ 137.19 (d) and (e)(2)(i),(ii),(iii) and (v) *Certification requirements*, 137.31 *Aircraft requirements*, 137.33 *Carrying of certificate*, 137.41(c) *Personnel*, and 137.42 *Fastening of safety belts and shoulder harnesses*. An exemption from these FARs is necessary because the provisions are either not compatible with or are unnecessary in the context of the proposed UAS operations.

§ 137.19(c) Certification requirements

The FAA has determined in past exemptions that relief from § 137.19(c) was necessary to permit persons holding a remote PIC certificate with small UAS rating to act as PIC for commercial agricultural aircraft operations when utilizing a small UAS to conduct the operations.

While the PIC in this petition for exemption holds a current U.S. commercial pilot rating, there is no applicable rating for the UAS the PIC will be operating. Therefore, compliance with the full requirements of 137.19(c) cannot be fully recognized and relief from § 137.19(c) is appropriate. Furthermore, the PIC will have the additional knowledge and applicable skill requirements in FAR § 137.19(e)(1) and (2)(i), (iv) and (vi) as well as full compliance with the training requirements in its operating documents.

Consistent with the FAA's prior analysis, compliance with the additional knowledge and applicable skill requirements in FAR § 137.19(e)(1) and (2)(i), (iv) and (vi), and compliance with the training requirements in Ocean Air Helicopters operating documents, will ensure that an equivalent level of safety will be achieved.

§ 137.19(d) Certification requirements

§ 137.31 Aircraft requirements

In Exemption No. 18009, the FAA granted Powers Flight Group Services an exemption to §§ 137.19(d), *Certification requirements*, and 137.31(a), *Aircraft requirements*. Consistent with the FAA's prior analysis in Exemption No. 18009, while Ocean Air Helicopters UAS will not have an airworthiness certificate, Ocean Air Helicopters will be capable of ensuring that the UAS are in a condition for safe operation based upon a thorough pre-flight inspection and compliance with the operating documents. The UAS components have a proven operational history and contain design safety features such that operations conducted under the requirements of this exemption will not adversely impact safety.

§ 137.19(e)(2)(ii), (iii), and (v) Certification requirements

Ocean Air Helicopters seeks an exemption from the knowledge and skill test requirements in § 137.19(e)(2)(ii), (iii), and (v) *Certification requirements*, because those requirements are not compatible or applicable to Ocean Air Helicopters proposed UAS operations. Consistent with the FAA's prior analysis in Exemption No. 18009, Ocean Air Helicopters training and certification program described in the operating documents provides

the PIC with the necessary skills to safely operate the UAS. For this reason, granting relief from a demonstration of the skills described in § 137.19(e)(2)(ii), (iii), and (v) will not adversely impact safety, and therefore relief is warranted. Ocean Air Helicopters pilots operating UAS under the exemption will still be required to demonstrate the skills listed at § 137.19(e)(2) as applicable, in accordance with the provisions of § 137.19(e), which requires such demonstration in order to obtain the agricultural aircraft operator certificate, unless otherwise exempted. Also, consistent with the FAA's finding in Exemption No. 18009, that relief from the associated knowledge and skill test requirements of § 137.41(c) is also warranted because of the relief provided to § 137.19(e)(2)(ii), (iii), and (v), Ocean Air Helicopters seeks an exemption from the interrelated knowledge and skill test requirements of § 137.41(c).

§ 137.31(b) Aircraft requirements

§ 137.42 Fastening of safety belts and shoulder harnesses

Ocean Air Helicopters seeks an exemption from § 137.31(b) *Aircraft requirements*, and § 137.42 *Fastening of safety belts and shoulder harnesses*, which relate to the installation and use of a shoulder harness and safety belt on an aircraft. An exemption from these requirements is warranted because Ocean Air Helicopters UAS do not have an onboard pilot and these regulations are intended to ensure the safety of the onboard pilot during manned agricultural aircraft operations. For this reason, granting the requested relief from §§ 137.31(b) and 137.42 will not adversely impact safety.

§ 137.33(a) and (b) Carrying of certificate

Ocean Air Helicopters requests relief from § 137.33(a) *Carrying of certificate*, which requires that a facsimile of the agricultural aircraft operator certificate be carried on the aircraft. The FAA has previously determined that relief from §§ 91.9(b)(2) and 91.203(a) and (b) for the carriage of the aircraft flight manual and aircraft registration onboard the aircraft is not necessary. Consistent with the FAA's prior analysis, an exemption is warranted here provided that a facsimile of the agricultural aircraft operator certificate and all certificates of registration are kept in a location accessible to the PIC.

Finally, given that Ocean Air Helicopters UAS will not have an airworthiness certificate, relief from § 137.33(b) *Carrying of certificate*, which requires the airworthiness certificate (if not carried in the aircraft) be kept available for inspection at the base of dispensing operation is conducted, is necessary. Ocean Air Helicopters will keep registration certificates available for inspection.

Ocean Air Helicopters has attempted to identify the appropriate C.F.R.s from which an exemption is needed in order to conduct the proposed operations in this Petition for Exemption. To the extent that the FAA determines that Ocean Air Helicopters needs an exemption from other C.F.R.s which are not addressed or explicitly named in order to conduct the proposed operations, Ocean Air Helicopters also seeks an exemption from those FARs for the reasons outlined above.

F. PILOT IN COMMAND CERTIFICATION

14 CFR § 61.3 (a)(1)(i) states that no person may serve as a required pilot flight crew member of a civil aircraft of the United States unless that person:

- (1) has in the person's physical possession or readily accessible in the aircraft when exercising

the privileges of that pilot certificate or authorization –

(i) a pilot certificate issued under this part.

The petitioner will conduct the proposed operations under 14 CFR part 91, rather than under part 107. In general, part 91 is predicated on the presumption that the pilot in command conducting an operation under part 91 holds an airman certificate under part 61.

Under certain provisions of Part 61, the PIC must possess either a Commercial, Private, Recreational or Sport Pilot Certificate. Additionally, a valid vehicle U.S. driver's license and USA citizenship is required. In this particular case, the PIC does possess a valid Commercial Pilot Certification, so Ocean Air Helicopters is not seeking exemption from 14 CFR § 61.3 (a)(1)(i).

These circumstances are similar in nature and recognized in approved Exemption No. 18222, Victor Lee and Associates, except that Ocean Air Helicopters will be conducting agricultural spraying operations under their current 14 CFR Part 137 certificate and will be conducted in accordance with those portions of Part 137 from which Ocean Air Helicopters is not exempted.

In addition to compliance with all applicable sections of Part 137, Ocean Air Helicopters proposed operations include the following mitigations:

- Prior to any flight operation, Ocean Air Helicopters will visit the area of planned operation and inspect the terrain and vantage points. Ocean Air Helicopters utilizes a number of tools available to capture this environmental data, including high-resolution LiDAR, photogrammetry, and handheld surveying tools. The result is a geo-rectified model of the unit, with GPS points accurately marking the boundaries of the geofenced flight operating area.
- Following that, all state and local paperwork associated with the operation will be filed before and after operations. Ocean Air Helicopters will comply with all state laws regarding the application of pesticides. These include state and local agency notification, mapping, and specified safety procedures.
- The Pilot-in-Command will possess either a Commercial, Private, Recreational or Sport Pilot Certificate with a current FAA airman medical certificate.
- Prior to beginning operations, the PIC will take all preflight actions as set forth in its preflight checklist.
- At least one visual observer (VO) will be used for each aircraft during all operations. Both the PIC and VO will maintain a safe distance from the UAS when it is operating as set forth in its flight manual.
- Flights will be limited to a maximum altitude of no more than 200 feet above ground level (AGL) and will normally be flown at altitudes of 10 to 30 feet AGL or less over private fields and other agricultural areas.
- The areas to be flown are remote agricultural sites or other uninhabited agricultural sites which makes for excellent VLOS conditions.
- All operations will occur in a closed-access environment.
- All personnel at the site will be controlled by Ocean Air Helicopters at the time of flying. The M8A Pro shall operate from on-site takeoff/landing locations directly next to the

PIC and co-located VO. The PIC and the VO will be able to verbally communicate during all operations or will utilize hand-held radios on site. In addition, signage announcing future spraying operations will be posted at the site entrance warning any customer employees or non-Participants that an aerial spraying operation is occurring. This is an industry standard process.

- The maximum flight time for each UAS flight will be a maximum of 40 minutes, with most agricultural flights lasting approximately 10-20 minutes.

Ocean Air Helicopters has integrated safety elements into the operation of its UAS, including comprehensive pilot and VO training and certification requirements. These requirements include: a comprehensive UAS training course, which includes theory and practical components, a pilot theory exam, supervised flight training, including agricultural spraying, completion of Ocean Air Helicopters training and examination program requirements, minimum flight time requirements, demonstrated practical flying ability for the relevant tasks, and continued periodic training after certification.

Flight Proficiency

FAR § 61.127 contains flight proficiency requirements for specified aircraft categories. In addition, to ensure flight proficiency on the M8A Pro, Ocean Air Helicopters will also require demonstrated multi-rotor proficiency in:

- Preflight preparation;
- Preflight procedures;
- Airport and heliport operations;
- Hovering maneuvers;
- Takeoffs, landings, and go-arounds;
- Performance maneuvers;
- Navigation;
- Emergency operations;
- Special operations; and
- Postflight procedures.

Aeronautical Experience

FAR § 61.129 contains requirements for aeronautical experience and Ocean Air Helicopters will require its pilots to obtain an appropriate level of aeronautical experience, in compliance with § 61.129, where applicable. Many of the requirements § 61.129, however, are either inapplicable or excessive for Ocean Air Helicopters proposed UAS operations. Commercial helicopter ratings require at least 150 hours of flight time. Much of this, however, need not be in a helicopter or as the PIC. Other flight time requirements in Part 61 are cross-country time or instrument time. There is no need for certified pilots operating UAS to obtain time spent in cross-country flight or instrument flight. Ocean Air Helicopters pilots will spend all of their time flying the make and model of multi-rotor aircraft that will be used in their operations. These aircraft are far less complicated than manned aircraft. The pilots can, therefore, achieve a comparable level of experience and safety by requiring 20 hours of total flight time of a multi-rotor system as the PIC with at least 10 take-off and landings. This will be required by the operations manual and training program.

G. FEDERAL REGISTER SUMMARY

Pursuant to Title 49 U.S.C. § 44807, Special authority for certain unmanned aircraft systems and 14 C.F.R. Part 11, 49 U.S.C. § 44701(f), and 14 C.F.R. Part 11, the following summary is provided for publication in the FEDERAL REGISTER, should it be determined that publication is needed:

Petitioner seeks an exemption from the following rules in Title 14 of the Code of Federal Regulations:

91.7(a), 91.119(c), 91.121, 91.151(b), 91.405(a), 91.407(a)(1), 91.409(a)(1) and (2), 91.417(a) and (b), 137.19 (c), (d) and (e)(2)(ii)(iii) and (v), 137.31, 137.33, 137.41(c), 137.42.

Ocean Air Helicopters requests an exemption for the purpose of operating Unmanned Aircraft Systems (UAS) weighing 55 pounds or more, but no more than and 98.8 pounds, to provide commercial agricultural-related services in the United States. The relief requested is similar to that granted in Exemption No. 18009, Powers Flight Group.

H. CONCLUSION

For the foregoing reasons, Ocean Air Helicopters respectfully requests that the FAA grant this Summary Grant Petition for Exemption. Should you have any questions, or if you need additional information to support Ocean Air Helicopters Petition, please do not hesitate to contact the undersigned.

Respectfully Submitted,



Kelly J. Neubecker

CEO

UASolutions Group, Inc.

Cc. Gregory Beck